Vol.XIII No.6 June 1984 Second class postage paid at Dallas Texas Postal identification statement, page 2

Published by Jim Cranshaw, N5FSL Monthly except July and August

Price: $8.50 yearly, single issue $1.00 Phone: (214) 286-1673

THE HORN SPEAKER

THE NEWPAPER FOR THE HOBBYIST OF VINTAGE ELECTRONICS AND SOUND

RADIO "BLOODHOUNDS" PICK UP THE SCENT

The "flying squad" leaving the post office to find the 400,000 radio "pirates" estimated within the London area. Whether the radio sleuths actually used direction-finders or relied on their ears in locating set-users is a question now puzzling Britishers

Radio News for April, 1932

British Radio Hoax

Traps "Pirate" Listeners

By **Austen Fox**

THE British Post Office has just "put across a hoax" on its trusting public which would make Tammany blush for shame—or, what is more likely, turn green with envy.

It all has to do with the affair of the detective "radio cars" created for the purpose of tracking to their lairs "pirate" radio listeners throughout the British Isles. As everyone probably knows, the British radio receiving-set owner must obtain a listener's license at the rate of ten shillings ($2.50 at par exchange) per year. Otherwise he is apt to have government inspectors descend upon him and padlock his radio set—or collect ten shillings. There is, of course, no danger of getting into jail for bootlegging radio programs over there—not any more than in America for running an "alleged" speakeasy.

Radio Tax Pays for Programs

But the British public as a whole is essentially honest. They go down and buy their licenses at the local post-office because they feel that a government decree or order is made to be obeyed. It has apparently struck them that it is entirely fair to expect them to pay a small license fee, a part of which, at least, goes to the monopoly company maintaining their broadcasting programs. They prefer this to advertising; they feel that they get better programs by such independence from commercialism. In this they are evidently more or less right. At least they do not have to get up every ten minutes to tune out some long speech about the advantages of Pale Pills for Pink Toothbrush, as most of American radio listeners do.

After some time, the General Post Office, however, began to grow suspicious of its honest public. The statistics on sales of receiving sets, parts, etc., did not seem to jibe with the number of listeners' licenses taken out. There were too few of the latter; anyway, some cynics started whispering nasty innuendos about human nature, and all that.

With true British caution, they did nothing for a while. They carefully looked over the ground, and discussed the problem from every angle. The general and the radio press likewise discussed it. Nothing came of the fuss, and the Post Office, like Br'er Rabbit, lay low and said nuffin'. The pirating of programs went right on as before. After all, what could they do about it? To maintain a great corps of inspectors would cost more than it was worth. To send a few here and there to catch and punish offenders might be partially effective, but it left the field pretty well uncovered. To spot the pirates otherwise seemed to be just an engineering impossibility.

Radio Bootleggers—Warning!

Suddenly, during the Fall of 1931, the radio public of England was awakened with a violent shock. The Post Office authority published an announcement, which was taken up and given plenty of space in the daily and the wireless press, that they were "out to get" these license dodgers, and no fooling about it either. They did not mince words—they said that it was just so much dishonesty, and that they would deal summarily with anyone caught. They were tired of letting fifty to one hundred thousand people sit around enjoying these programs on which the British Broadcasting Company had labored so long and lovingly, all at the expense of the honest people of the island.

Being truly British, they were sporting about the warning. They told the people just when they were starting off on their crusade of reform, and they also told just how they were going to achieve their results. A broadcast (*Continued on page* 874) from the British Broadcasting Company studios, and a broadside in the press, opened the war. On a certain fateful day, named and dated exactly in this year of Our Lord 1931, two or more heavily armed vans (trucks) would set forth, manned by grim, determined engineers, who would stop at nothing (except the houses of pirate listeners), and one after another would bring these evil-doers to justice.

The vans were to be armed with everything of the latest in radio direction-finding apparatus, ultra-sensitive and extra-accurate. They were to cruise the streets of London and the suburbs at first, and then go on to other localities. Dark and mysterious would be their movements, they would come with a blast of trumpets, "alarms and excursions off stage". In other words, they would not sneak into a town and catch these good people unaware. They would give everyone fair warning when they were about, and it was just too bad for those who failed to take advantage of this fair play and get their licenses in the meanwhile. They would not question any license which might show a more recent date than the radio set—but Heaven help the poor soul who had none!

For a week they operated with the grim efficiency of Scotland Yard closing in on a band of criminals, while whole veins of shivers ran up and down the British radio spine. It was found, said Post-Office authorities, giving out communiqués as from a battle front, that the morning was the best time to work, when the husbands were away and the wives were whiling away their housework hours with gay melody. Not three days after the opening of the campaign, there appeared in both the London newsreel theatres—one on Charing Cross Road, the other on Shaftesbury Ave., in the West End, pictures of these wonderful automobiles at work catching pirates. We were shown the inside of the "van," filled with lovely direction-finding sets, wheels, and gadgets. We were permitted to see the engineers actually track down a set, and went with camera right to the front door of a house, where the inspector rang the bell, asking to see the license of the householder; and when the good wife admitted, with very evident embarrassment in the face of the camera, that there was no license, she was politely but firmly warned that His Majesty's Government would find themselves obliged to proceed against that family to the full force of the law. There we had the working of this new policing system displayed to us in brief, convincing form.

The vans moved on and ever on. They were announced in Richmond, in Westminster, in Mayfair, in Acton Town and Poplar —and the citizens of each of these boroughs ran shivering to the branch post offices, "queing up" in long lines to wait their turns to pass the government their ten shillings for a slip of paper guaranteeing them protection and peace from the stern vans which so inexorably sought them out. The radio detectives went to Oxford, to Cambridge, to Dundee and Glasgow, and from John o' Groat's to Land's End, heralded far and near by the ever vigilant press and the unbiquitous newsreel. And in Glasgow and in Plymouth, on the Isle of Wight and on Clydeside, the lawbreakers fled to cover themselves with licenses.

New Licenses

At the end of about two weeks, an announcement was made that some thirty to forty thousand new licenses had been taken out, and that the radio vans were really proving themselves effective. They had, in other words, made perhaps, £20,000 (nearly $100,000, at par value) for the Post Office and the B.B.C. to split between themselves; and they had installed a proper respect for the law into many hitherto unpatriotic British breasts. Whereupon for a moment they dropped from the public eye.

Can It Be Done?

Until suddenly the public began to take note of the mutterings of a few cynics who had from the first said they did not believe that any such vans could be built. How, said these cynics, could anyone detect a receiving set? Of course, they might wait until some set oscillated, and then take a "bearing" on it. They would then move along 100 yards or so and wait until the set oscillated again, and take another bearing—"Oh, yeah?" (they are using that expression over here now, thanks to the American talking films.) "That would be just fine; but by the time they had gotten to another spot, the chances were that the listener would have tuned off. Anyway, he would not still be oscillating. They might, of course, try to tempt him to oscillate by doing a bit of fancy reradiation themselves; but that would bring in perhaps twenty people in all the London area—and probably eighteen of those would have licenses anyway."

The Secret Is Out

So the secret seems to be that the vans were just used for the publicity they could obtain. At least, the British public is getting very suspicious that it has been badly hoaxed. It is true the van riders rolled merrily along the residential streets twirling their frame aerials and looking fierce, but in reality they listened carefully for any sounds of radio broadcasting that might come through open windows. It has been a fairly mild Fall in England, and the British are fresh-air fiends. They keep their windows open until the last possible moment. Even an amateur detective might be able to learn that some house was equipped with a radio set; and it would not need a remarkable pair of ears to trace it down. It is reported that the van riders went into houses, after listening at doors and windows, whenever they heard strains from a radio.

Anyway, the B.B.C. and the Post Office are rubbing their hands over a tidy sum of delinquent license fees; and the English people, who, in spite of all American belief to the contrary, are quick to see a good joke on themselves, are chuckling at their own gullibility in not even questioning how these vans could find them—the while the Post Office says it has something even bigger and better in the way of "radio van" now coming out, which will detect any metal antenna of over six inches long.

With which, one journalist opines, they will find a wonderful amount of drain-pipes, eaves-troughs, and household plumbing.

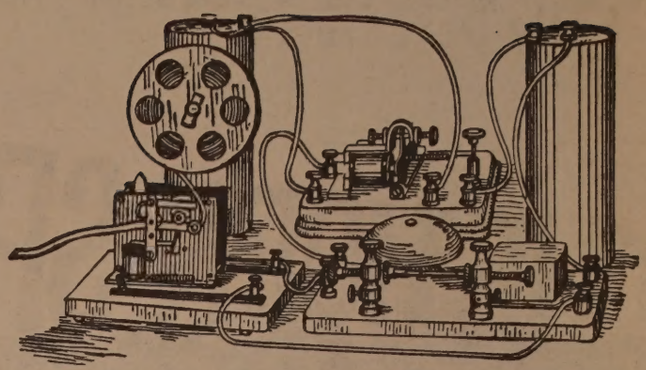
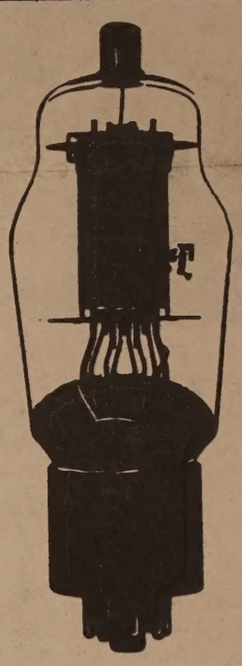


FIG. 3,188.—Wireless recorder outfit. This shows the picture of a coherer connected to a telegraph relay. This will close a local circuit when the relay armature is drawn against the inner contact and will operate the telegraph ticker shown or any other apparatus, even to the lighting of lights or the starting of machinery. In this way torpedo boats and submarines may be controlled by a wireless transmitting station if the boats be equipped with a coherer set for receiving and closing the circuit. Also a decoherer is used to tap the coherer and break the circuit. This has not been developed to a commercial success because of the delicate adjustment required for the coherer and the liability to interference by foreign disturbances. In the European war the system has played no important part.

HAWKINS ELECTRICITY, 1917

7,000,000 TUBES



More than 7,000 different types in stock! All unused, tested and fully guaranteed. We have all those precious 'OLDIES' - the tubes you need to get those valued antique receivers back into action.

You can buy the specific tube you need from our catalog and/or one of our great assortments of rare old receiving tubes. These include some of the most frequently used tubes of the 20's, 30's, and 40's. Available while they last at these low-low prices.

Golden Oldie Assortment #1: 20 different radio tubes $15.00
Golden Oldie Assortment #2: 35 different radio tubes $25.00

Write today for free catalog and special tube offers!

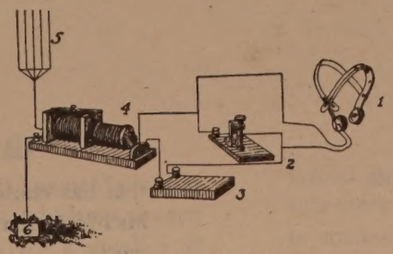
UNITY ELECTRONICS

P.O. Box 213 • 107 Trumbull Street • Elizabeth, New Jersey 07206 • 201-351-4200 TELEX 139403

POSTAL IDENTIFICATION STATEMENT The Horn Speaker (USPS 956120) is published monthly, except July and August by Jim Cranshaw, N5FSL, 9820 Silver Meadow Drive, Dallas, Texas 75217. Subscription rates are $8.50 per year, $15.00 for two years. Second class postage paid at Dallas, Texas. POSTMASTER: SEND ADDRESS CHANGES TO MAIL ADDRESS: THE HORN SPEAKER, P. O. BOX 53012, DALLAS, TX 75253-0012. (ISSN 2537-1430)

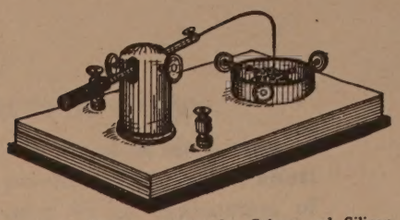
Early Detectors

Before 1920

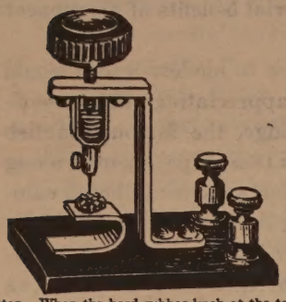


RECEIVING APPARATUS

1, receivers for ears; 2, detector; 3, fixed condenser; 4, loose coupler; 5, aerial; 6, copper plate in ground.



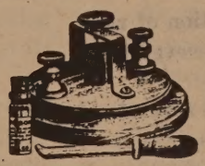
Detector Holder for Galena and Silicon Crystals.



Crystal detector. When the hard rubber knob at the top of the detector stand is turned, the needle point, which presses into the crystal is moved up or down. This allows of a variable adjustment which may be tight or loose, as desired. The spring shown helps to push the crystal up against the needle point.

1908

MODERN ELECTRICS premium

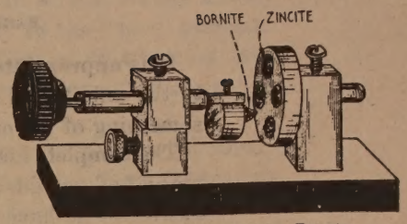


ELECTRO-LYTIC DETECTOR

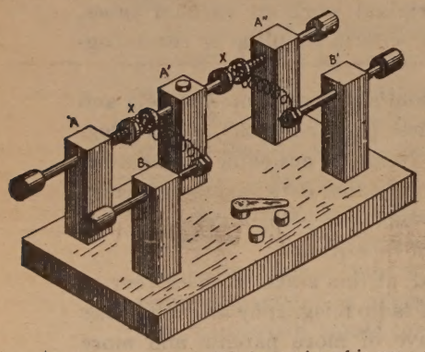
Latest improved type. Homogenous carbon cup. Micrometer, thumb screw carrying fine Wollaston wire 0.0001 inch diameter.

Will catch messages from 500-800 miles.

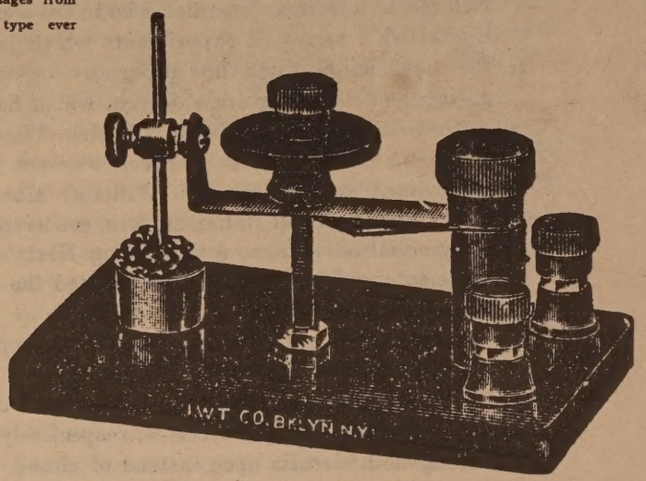
Most sensitive type ever gotten up.



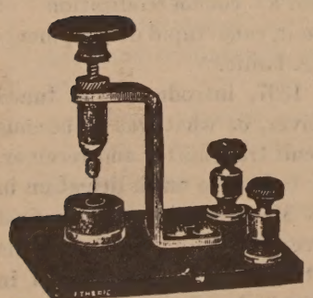
The Zincite Bornite Detector.



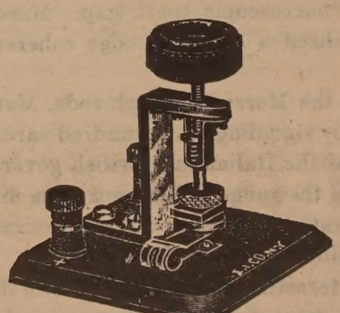
Combination galena detector. This detector is used in case a quick change is necessary. If one of the points of this detector happen to be knocked out of adjustment by static or other means, the other detector can be easily thrown in the circuit by making use of the two point switch. The arm of the switch is connected to one side of the circuit while the points are connected to B and B'. The base of this detector, or A, A', A'', are all connected together and led to the other side of the circuit. The detector can be adjusted to the highest degree of sensitiveness, and is easy to construct. Make uprights of one-half inch square brass rod, each one inch high. The distance between A and A' is 1¾ inches, and one inch between A and B. The springs between X and A will hold the mineral in tight adjustment, while the check nut in A' holds the other rod from slipping.



Crystal detector with double adjustment. This instrument is particularly designed to readily allow the delicate adjustment of any crystal or mineral. The very finest micrometer adjustment can be had by simply turning the hard rubber knob. It has two adjustments, one by means of the sharply pointed rod which can be lifted up or down and the other by the knob.



Electrolytic detector invented by Fessenden. It is probably the most sensitive of all detectors excepting the audion and the valve detectors. It consists of a carbon cup connected to a binding post and an adjustable standard which holds a very small hair-like platinum wire which dips into a 20% diluted solution of nitric acid. The high resistance of this acid detector is somewhat reduced by incoming wireless waves and when a telephone is shunted around it, the varying resistance is sufficient to vibrate the diaphragm but not strong enough to work a telegraph relay. When a potentiometer and battery are connected with the electrolytic detector and telephone, the sensitiveness is increased. The electrolytic detector is capable of operation with about three hundred micro-ergs; the magnetic detector is capable of operation with about four hundred micro-ergs; the silicon and most crystal detectors with about one thousand micro-ergs, and the manufactured carborundum detector with about nine thousand micro-ergs. Notwithstanding this very considerable difference in the sensitiveness of the electrolytic and carborundum detectors as measured by the C. G. S. system of units, in the actual practice of wireless telegraphy the receptive difference is hardly perceptible over similar distances. A great deal depends upon the adjustment of the detector which is a "cut and try" procedure until the most sensitive point is arrived at which will best respond to incoming signals.



E. I. CO., 1913

Peroxide of lead detector. A flat piece of peroxide of lead is clamped between a platinum surface and a flat piece of lead. Binding posts connect to these two electrodes and are marked + and −. The positive pole of a battery is connected to the platinum electrode at the binding post marked +.

Sources for illustrations:

Hawkins Electrical Guide No. 8, 1917.

Practical Wireless Telegraphy, Elmer E. Bucher, 1921.

Modern Electrics, August, 1908.

RADIO
UP TO THE MINUTE

CHAPTER I

EARLY DAYS OF RADIO

It is appropriate that any explanation of radio to the uninitiated should include, however brief, something of the origin of the art.

The complete history would require several volumes and would include the efforts of experimenters who have contributed to the final result, but who did not in their day even dream of what they had individually assisted in constructing.

The radio art owes its origin to Professor Heinrich Hertz, a German scientist, who in the eighties conducted a series of experiments which led to the construction of the first apparatus for propagating and detecting ether waves, which he described in 1888 in his book "Electric Waves." Professor Hertz's work, however, was not fully proclaimed until Guglielmo (William) Marconi, then a very youthful Italian student, conceived its commercial advantages and utilizing Hertz's experiments and his own ideas originated the first practical radio stations.

Hertz, the pioneer, had understood and applied the principle of resonance. Marconi took the Hertz oscillator and resonator and adapted them for a transmitter and a receiver, respectively, by making both circuits open instead of closed, and grounding the antenna. Tuning between the transmitting and receiving antennæ in this pioneer work was accomplished by increasing or decreasing the capacity of the plates on top of his aerials.

In his experiments Hertz had used for a detector a microscopic spark gap. Marconi in his work utilized a Branley-Lodge coherer as a detector.

Using the Morse telegraph code, Marconi commenced by signaling a few hundred yards, but with the aid of the Italian and British governments he increased the range of his apparatus until he had demonstrated that radio was a practical commercial possibility with unlimited scope.

It is interesting at this stage to note that Signor Marconi, more fortunate than some famous inventors, surrounded himself with associates who had the foresight and imagination to picture the future possibilities of the new science. It was this that has enabled Marconi to-day, in the prime of his life, to reap the material benefits of his pioneer work.

No historical reference to modern radio would be complete without appreciating the experiments of Sir Oliver Lodge, the famous English scientist who, as early as 1888, experimented along the lines originated by Hertz and contributed valuable aid towards making the art the success of today. Later Professor Lodge was to become associated with the Marconi interests, as also was another eminent Englishman, Professor J. A. Fleming, who has contributed to the radio art several valuable text books. In fact, it might be stated that he was first to write any substantial work on the subject. Later he was to revolutionize radio with his original work on vacuum tubes, which we will deal with in its place or chronological order.

Following Marconi's entrance into the field and the filing of his first patent in 1895, radio telegraphy was taken from the academic to the commercial stage and from that date various improvements by innumerable experimenters have followed with endless repetition.

It may be stated, at this stage, without fear of contradiction, that radio telegraphy and telephony has been productive of more patents and more patent litigation than any other science, art or industry invented by man. Patents issued to date in the United States and foreign countries already number tens of thousands. Litigation upon the subject has littered the courts. Reference to all who have contributed to the art can, therefore, not be made within the scope of this volume, and any neglect to give credit, where credit is due, is not premeditated. We will endeavor to give the reader only the principal events which seem to occur, as it were, as stepping stones in radio engineering.

Following Marconi's commercialization of radio, as we may term it, came rapid developments on both sides of the Atlantic.

Nicolas Tesla, in 1897, introduced the tuned transmitter and receiver, or what was to become known as the two circuit transmitter and receiver, which was eventually to lead to much litigation in the courts. In 1898 Marconi patented his first double circuit receiver, retaining, however, his original plain aerial transmitter. Della Riccia, in the same year, adopted a closed and open oscillatory transmitter, while Braun and Stone, in 1899, both devised inductively coupled apparatus.

Ducretet and Pupin, in 1899-1900, it would seem,

were the first engineers to resort to what is known as conductively coupled circuits, which were used most successfully commercially for a number of years prior to the introduction of radio laws and regulations. After the promulgation of these laws, conductively coupled circuits became impractical as the wave emitted did not comply with the requirements of the new regulations.

In 1900 Signor Marconi and Professor Braun shared the Nobel prize for their efforts in the radio field. This was the first public recognition of the new science and an acknowledgement of its importance in the scheme of human events.

High Spark Frequency.—Wireless telegraphy had now reached a stage when its study attracted the brightest minds of the scientifically thinking world.

All the earlier equipments had employed as a primary source of energy induction coils, with various means of breaking the direct current. Owing to mechanical difficulties these "make and break" devices were necessarily slow in action, with the resultant low spark frequency. The manipulation of these early equipments required considerable skill on the part of the pioneer operators to maintain a "spark," indeed, the old time radio telegrapher, in despatching a batch of business, necessarily would conduct a series of experiments during his efforts.

These induction coil sets gradually gave way to "power" sets, in other words, alternating current supplied by motor generators, supplied the power source. The usual commercial frequency of sixty cyles was first employed. While the practical operation of radio apparatus was immeasurably improved, the low spark frequency objection still remained.

Fessenden appears to be the first radio engineer to suggest a remedy to low spark frequencies and apparatus known by his name appeared which gave forth a high musical note and did much to overcome "static" or "atmospherics," which has been and continues to be the bugbear or hoodoo of radio.

A German system known as "Telefunken" also utilized a high frequency alternator to produce the high musical note.

These high spark frequency equipments utilized either rotating gaps to convert sixty cycle alternations or "quenched" gaps. The latter are used almost exclusively in modern equipments, owing to their efficiency in their "dampening" effects.

Perhaps we should here remind the reader that a full or comprehensive study of the above mentioned apparatus will be found in the portion of this work devoted to practical radio, and no effort is made in this chapter to an explanation of their construction or functioning.

EARLY DAYS OF RADIO

While the development of radio was progressing rapidly, during the decade of 1900-1910, the "spark" was practically the only system used in commercial wireless telegraphy. Great progress, however, had been made in what is to-day known as the "continuous wave" or the "arc" systems. As the former term indicates, this system employed a continuous or "undamped" wave as its principle.

Poulsen was the originator of the "arc" method, while Alexandersen produced a high frequency alternator, which, while having a comparatively low rate of R. P. M., delivered an exceedingly high frequency. Both systems are used extensively to-day by operating companies.

An evolution of the vacuum tube, dealt with later, also produced another form of continuous wave radio transmission, which can be said to have put radio telephony where it is to-day.

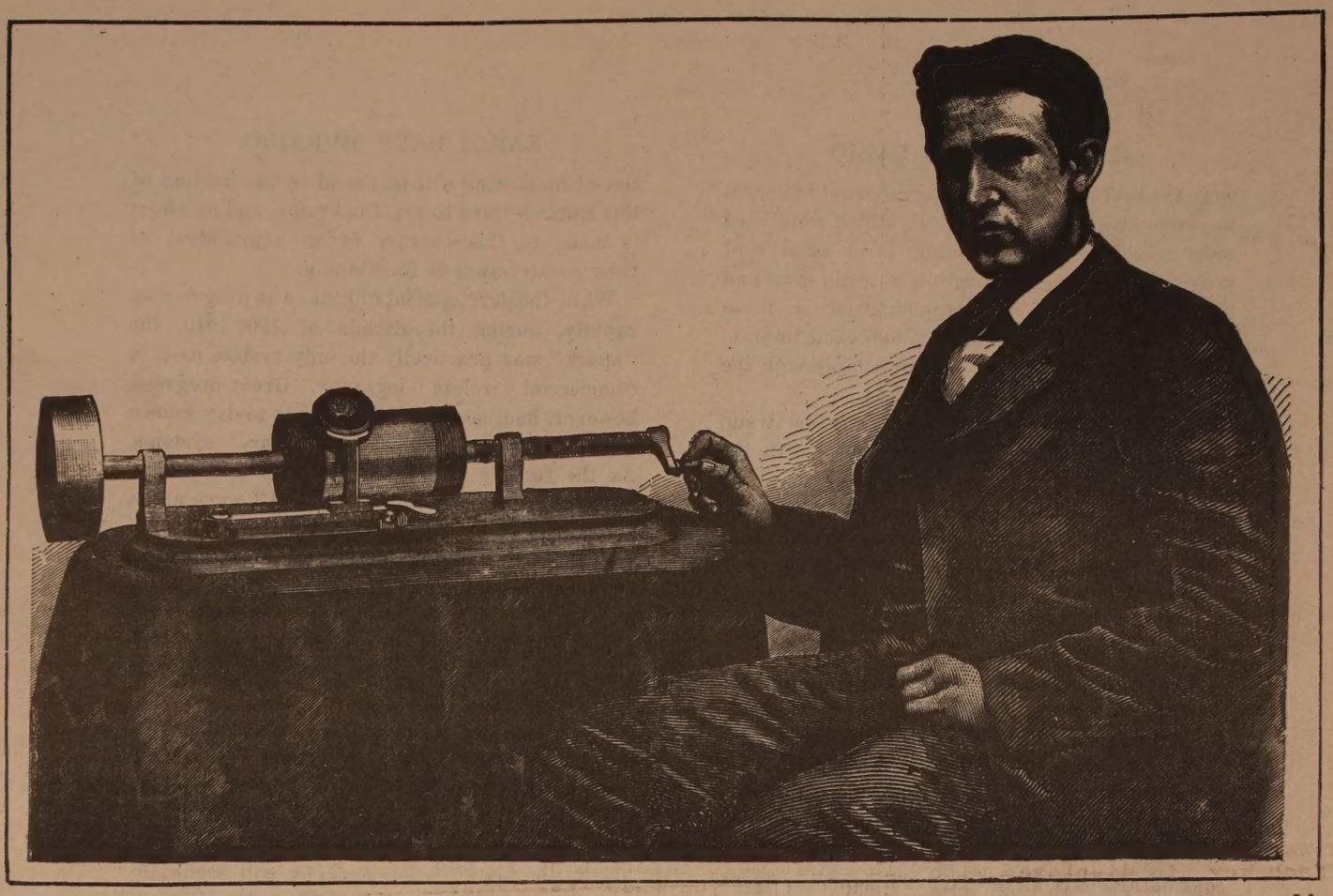
Undoubtedly, owing to its greater efficiency, continuous wave radiotelegraphy will eventually displace the spark systems, although, especially on shipboard, both systems are often used in one station. This, however, is merely as a convenience and a necessity under existing conditions, as a complete change from one system to the other would be too radical from a commercial or practical point of view. It is one that will come very gradually.

It will now be necessary to go back to the comparative early days of radio to bring the reader to the development in the science, which possibly, has resulted in the astonishing, and we might say, miraculous results that are obtained to-day.

Vacuum Tube Discovered.—Professor J. A. Fleming, after associating himself with Marconi, developed what is known as the "Fleming Valve." This invention was to be the most important development in the radio field.

The Fleming valve was inspired from the effects of the Edison incandescent electric lamp, and takes us into a study of the "electron theory." Thomas Edison, the inventor of the lamp, had experimented in its pioneer days and discovered that by placing a plate within a bulb separate and untouching the filament, a flow of electrons was observed from the filament to the plate.

Fleming, casting about for an improved detector, studied this effect and discovered that this flow of electrons was always in the same direction



Edison at the age of 31 years old

Scientific American, July 6, 1878

THE PHONOGRAPH AND ITS INVENTOR, MR. THOMAS A. EDISON.

EARLY DAYS OF RADIO

and of a negative nature, flowing from the heated filament to the cold plate. This flow could be controlled by inserting a rheostat in the filament circuit and increasing or decreasing the filament current. These valves when properly constructed made excellent detectors for "spark" radio signals.

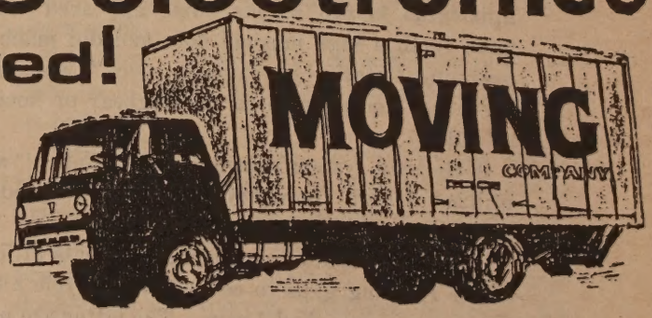
After Fleming's valve came the discovery by Dr. Lee DeForest, of the "three element" vacuum tube, which he called an "audion." DeForest inserted what he termed a "grid" between the filament and plate. This was possibly the most important discovery yet made in the new science of radio, and during the years of the World War, was to revolutionize the art. With the coming of the audion, methods of amplifying or increasing the intensity of radio signals were devised.

One method of amplification, discovered by Armstrong, then a Columbia University student, was the "feed-back" or "regenerative" circuit, which is now almost universally used in radio practice.

A full description of vacuum tubes and associated circuits is not intended here, but will be found under that caption in the practical course which follows.

ARS electronics

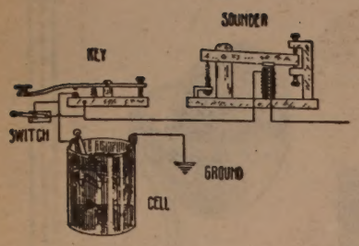
moved!



PLEASE NOTE OUR NEW ADDRESS--Effective May 1, 1984

ARS Electronics
P.O. Box 486
Mercer Island, Washington 98040

ARS continues to offer the best in servicing data and technical information.



THE K5RW COLLECTION OF WIRE AND WIRELESS TELEGRAPH KEYS

The K5RW collection is a private musum of wire and wireless telegraph instruments. the collection consists of 197 pieces. most are semi automatic keys or "bugs" as they are most commomly called. There are approximately 100 different "bugs" in the museum, making it one of the largest collection of "bugs" in the world. there is also an assortment of spark, wireless, radiotelegraph, landline and submarine cable instruments. the museum can be seen by appointment. Visitors are always welcome.

Each key is displayed with an I.D. card that shows the date that the key was made, the manufacturer and model number, the original owner and any historical innformation. Some of the more interesting keys in the museum are a 1904 Vibroplex (first model), a Marconi key that uses ball bearing at the fulcrum, a rare Australian vertical broadside bug, a 50 amp spark key, an early mechanical code trainer known as the Omnigraph, a Bunnell key that was used on thee "pony wire" at the RCA Rocky Point / River Head Long Wave wireless station and a Creed paper tape reader from a Trans- Atlantic cable station.

The museum also contains a large collection of resource material pertaining to keys, the manufacturers and the people that used them. Many personal accounts are recorded by letter and on tape.

The largest assembly of resource material and memorabelia concerns T. R. McElroy, the world's champion telegrapher and radio- telegrapher. (McElroy's record, set in 1939 remains unbeaten to this day.)

Resource material is being put together on the Martin, Vibroplex and United Electric keys. A comprehensive list of major models has been compiled. also a list of domestic makers of bugs is continually being updated as is a list of pre-1926 wireless keys.

Fiding a new tidbit of information about old keys is as much fun as finding an old key. so research into the "Golden Age of Communication" is an ongoing activity.

The search for new keys and related instruments continues. Priority is given to spark keys, rarer Vibroplex/ Martin models, off-brand bugs, landline apparatus and submarine cable instruments. Secondary priority is given to wireless components.

Curator of the museum is Neal McEwen, amateur radio operator K5RW (formerly K5ZJP). He is 39 years old and has been a ham for 25 years. He is married, father of two children and employed as a research computer programmer by an energy company.

Neal saw his first "bug" at age fourteen and that's when his fascination for keys and telegraphic codes began. Several years ago he decided to start a small collection of "bugs." The deeper he got into it the more interesting it became. (Did you know that there has been more than fifty different firms that manufactured "bug?") The small collection soon became a large collection and Neal's interests expanded to other telegraphic instruments as well.

At present the curator's interests address all areas of telegraph and radiotelegraph instruments and history. There is so much to be learned, so much interesting history and so many instruments to be rescued from obliven that Neal plans to continue present activities as a lifetime advocation.

73 de K5RW
B. Neal McEwen
Richardson, Texas

Mailbox

Dear Jim,

You've got the best paper of all of them-- you should raise the price to a least $10.00 a year.

I've got a Zenith Stratosphere now-- it's absolutely beautiful and precision rebuilt-- it's quite a radio-- and I think the top collector's item of them all.

Jim, at $750.00 they cost more than a Ford, Chevrolet or Plymouth in 1936.

I've got the latest model and .... have'nt found the others yet.

Oh yes, heard there were only 400 built--...

Some people are asking $5,500- (LA) - $6,000 (Monterrey Calif. for them.

If you want more info or pictures front and back-- can send them.

Art Corbus

EDITOR... Thanks for your comments about the Stratosphere. Please send more information and pictures. Information came from the Columbus Georgia Auction that a set like yours sold for a similar price.

Sir:

Can you give me any information on collectors of old radios.

I have a Zenith, one of the first kind made and the Zenith Company of Glenview IL/ says it is of some considerable value.

Thanks
Stella Filley
317 N. Center
Cameron, MO 64429

Dear Jim:

Why dos it take so long for my copy of THE HORN SPEAKER to get here?

I received my April issue today -- May 1st..

Several times I have called someone who is advertising a radio that I want, only to find that the radio had been sold, days before.

I would be happy to include first class postage the next time I renew.

C. H. R.
Sheboygan, WI

EDITOR... First class is $15.50 a year and anyone's subscription can be pro rated to first class.

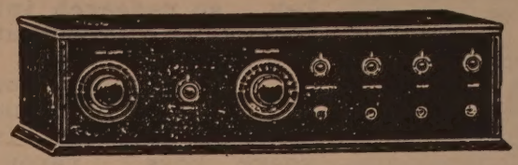
We got behind on our mailing schedule several months ago, but we will catch up during the combination months of June July and August. However, remember that all the regular second class subscriptions are mailed at the same time.

I have just received information that now there is a way for monthly publications to receive the fast mailing that weekly and daily publications get on a regular basis. So, in the future our second class mail might be much faster.

THE OLDE TYME RADIO COMPANY

2445 LYTTONSVILLE ROAD SILVER SPRING MD 20910

"Also can provide reprints of the following Olde Tyme Radio publications:
* Atwater Kent Instruction Manual
* Atwater Kent Equipment Catalog
* Radiola IIIA manual
* Flick of the Switch and Vintage Radio.



NEED HARD TO FIND OLDE TYME RADIO PARTS SUCH AS:

*Vintage Tubes
*AK Style Battery Cable
*OLDE Tyme Hookup Wire
*Brown Silk Type Power Cord
*Audio Transformers
*Power Transformers
*Headphones
*Headphone & Speaker Cords
*Ant., RF, Osc, & IF Coils
*Speaker Grill Cloth
*Pilot Lamps
*Xtal Set Parts

AND MUCH, MUCH MORE. ALSO, AS A CONVENIENCE TO YOU, WE CAN EVEN PROVIDE COPIES OF THOSE EVER POPULAR BOOKS "VINTAGE RADIO" & "FLICK OF THE SWITCH" IN SOFT COVERS. SCHEMATICS OF MANY VINTAGE RADIO AND TV SETS ARE ALSO AVAILABLE. FOR FREE FLYER SEND SASE TO OLDE TYME RADIO COMPANY, 2445 LYTTONSVILLE ROAD, SILVER SPRING, MD 20910.

WISH TO REACH US BY PHONE? THE NUMBER IS 301-585-8776. PLEASE CALL BETWEEN 7:00 and 11:00 PM LOCAL TIME ANY DAY OF THE WEEK.

PUETT ELECTRONICS

P.O. BOX 28572 DALLAS TX 75228

YOU ARE THERE WITH A CROSLEY

BY JOHN H. ALFORD EDITED BY J.W.F. PUETT

78 PAGES ----------$14.95 POSTPAID!!!!!!!

THIS BOOK CONTAINS SCHEMATIC DIAGRAMS OF CROSLEY MODELS ACE V; CROSLEY VI; CROSLEY TWO-STEP; CROSLEY IV; CROSLEY X; CROSLEY XJ; ACE 3B; CROSLEY 50; CROSLEY 51; CROSLEY 52; CROSLEY 50A; CROSLEY 51A; TRIRDYN 3R3; SUPER TRIRDYN; CROSLEY PUP; CROSLEY 5-50; BANDBOX JR. 401 & 401A; BANDBOX 601; GEMBOX 608; JEWLBOX 704; 704A & 704B; D.C. SHOWBOX 705; SHOWBOX 706; AND THE CROSLEY MUSICONES. OWNER'S MANUALS FOR MODELS 51 AND 51 SPECIAL. CROSLEY COMPANY LETTERS WITH HISTORICAL DATA FROM 1922 TO 1924. ADVERTISEMENTS FROM 1922 TO 1929, MOST OF WHICH ARE FULL PAGE ADS. ORDER YOUR COPY OF THIS FANTASTIC BOOK TODAY!!!!!!!

****

SEND $2.00 FOR OUR COMPLETE CATALOG OF PERIODICALS, TUBES, BOOKS, OLD TIME RADIO PROGRAMS ON CASSETTES, APPRAISAL SERVICES, OVER 600 BOOKS AND ITEMS OF LITERATURE FROM TECHNICAL MANUALS TO CATALOGS, TUBE MANUALS, RIDER INDEXES, AND MANY OTHER ITEMS.

BOARD

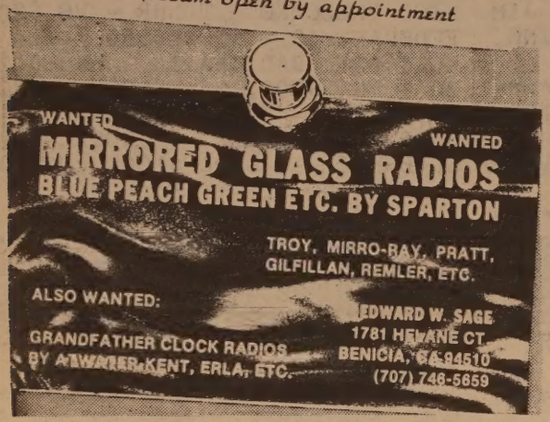
Museum (312) 742-0183 Residence (312) 741-0573

MUCHOW'S
HISTORICAL RADIO MUSEUM
DEDICATED TO WIRELESS HISTORY

DR. R. W. MUCHOW
Curator

107 CENTER STREET
ELGIN, ILLINOIS 60120

Museum open by appointment



ANTIQUE AUDIO

SALES AND SERVICE

* ALL VINTAGE RADIOS, PHONOGRAPHS, SPEAKERS, TELEPHONES, TELEGRAPHS, TELEVISIONS
* TUBES
* NIPPER DOGS, CERAMIC 2½ IN. TO 12 IN.
* OVER 1,000 TAPED PROGRAMS
* LINE CORD, KNOBS, PLUGS, SCHEMATICS
* PUBLICATIONS. . .Antique Radios: Restoration and Price Guide. . . Flick of the Switch . .many more

WRITE OR CALL FOR PRICE SHEET

Mastercard, Visa, American Express

HOUSTON, TEXAS 77005 1740 SUNSET,BLVD (713) 521-0102

MONDAY - FRIDAY
9-5

ANTIQUE ELECTRONIC SUPPLY

1725 W. University • Tempe, Arizona • 85281 • (602) 894-9503

****
TUBE SPECIALS
****

NEW TUBES IN INDIVIDUAL CARTONS

Type	Price
1R5	1.00
6BQ6GTB	1.00
6J5/GT	1.00
7Y4	1.00
10	2.00
27	2.00
30	2.00
39/44	2.00
50Y6	1.00
71A	2.00
76	2.00
80++	2.00

++(Type 80 from Japan. All others are major U.S. brands: GE,RCA etc) Limited quantities. Sale price good thru June 30, 1984.
MINIMUM ORDER: 5 PER TYPE

COLLECTOR'S SPECIAL

Brass base, no tip.
UV 201 A 15.00
C 301 A 15.00

We also have a few blue Arcturus and other special collector's tubes. Contact us.

CAPACITORS

TUBULAR ELECTROLYTIC CAPACITORS - AXIAL LEADS

16 MF	500 V. CDE	1.80
22 MF	500 V. UNICORN	1.10
80 MF	450 V. FIVE STAR	1.90

TWIST MOUNT ELECTROLYTIC CAPACITORS

10 MF	450 V. MALLORY	1.60
10-10-10 MF	400 V. MALLORY	2.90
30 MF	450 V. MALLORY	2.70

CAN TYPE ELECTROLYTIC CAPACITORS

1 3/8" Dia. by 3" high. Uses clamp mount.
45 MF 450 V. MALLORY 2.95

SMALL TUBULAR METALIZED POLYESTER CAPACITORS

Rated voltage 250 V., test voltage, 750 V. Tolerance ± 10%.

.01 MF	.24 x .59 inches	.31
.022 MF	.24 x .59 "	.31
.047 MF	.24 x .71 "	.31
.1 MF	.30 x .71 "	.36
.47 MF	.39 x 1.1 "	.55
1.0 MF	.53 x 1.1 "	.87

TUBE SOCKET SPECIAL:

Amphenol 4 pin Steatite in mounting plate.....1.50
6 pin and octal wafer sockets Four for.....1.00

RADIO AND SPEAKER PRICE LIST

Our list of vintage radios and speakers for sale is constantly changing. Our current list is dated March 1984 and has over 150 pieces listed. If you do not yet have this list, you may obtain it by sending a business-size, self-addressed, stamped envelope.

NEW - RADIO COLLECTOR LAPEL PIN...

Gold with multicolor brown enamel cloisonne pin. Has Atwater-Kent cathedral on it with single word "Collector". Round, 1" dia.
AE-215.....4.95

Minimum order is $10. Add $2 handling, plus sufficient shipping on each order.
Send $1 for our 16-page catalog of parts and tubes.

Dear Jim;

I have been getting your paper for a number of years and service has usually been good. However, when the April issue was due to arrive all I received was the cover with no "Horn Speaker" inside. So please send me an April issue next time you mail out a paper and thanks. (Editor.. yes, glad you told me so that I can correct it.)

I attended a meeting of AWA at Augusta, Georgia, March 26th and met some nice "antiquers" there. Had a good meeting and a flea market and some bargaining afterwards. Most of fellows were from Georgia, Alabama, south Carolina, Florida and my wife and I from Miss...

By the way I need a single volume control for an AK 60C. ... Good luck to all V.R.P.S. members.

Bill Irvine
314 Hamilton St.
Route 6
Gulfport, MS 39503

CLASSIFIED

AD SPACE:
Full page.....$65.00
Half page.....$35.00
Quarter page..$20.00
Multiple runs....20% discount

Card size.. $5.00

SALE

****
OVER 100 RADIO ITEMS FOR SALE/ SWAP. SEND LARGE S.A.S.E. OFTEN FOR LIST. (UPDATED WEEKLY) JIM CLARK, 1006 PENDLETON, LANSING, MI 48917..
****
FOR SALE- CATHEDRAL, BATTERY AND A.C. RADIOS. SEND SASE. J. ALBERT WARREN, BOX 279, WAVERLY, PA 18471.
****
DX CRYSTAL, ONE TUBE sets, kits, plans, handbooks, coils, supplies. Obsolete tube quotations. Catalog $1.00; none free. Laboratories, 1477-H Garden Grove, CA 92642.
****

classified ad

Please print and punctuate. Clip and Mail

THE HORN SPEAKER

Box 53012, Dallas, Texas 75253

Classification _____

_____ _____ _____ _____ _____
_____ _____ _____ _____ _____
_____ _____ _____ _____ _____
_____ _____ _____ _____ _____
_____ _____ _____ _____ _____
_____ _____ _____ _____ _____
_____ _____ _____ _____ _____
_____ _____ _____ _____ _____
_____ _____ _____ _____ _____
_____ _____ _____ _____ _____
_____ _____ _____ _____ _____

10 cents per word

Number of words _____ Number of issues_____ Amount Enclosed ___

Important: Box number ads require name and address of advertiser

****
TUBES FOR EARLY ELECTRIC RADIOS. SASE FOR FREE PRICE LIST. SAM FAUST, CHANGEWATER, NJ 07831.
****
FOR SALE: NEW (AND USED) RADIO TUBES AT OLD PRICES. SEND LARGE SASE FOR THE NEW DCL- SORRY, NO MORE 71A'S AT $3.75. WRITE FOR SPECIFIC PARTS, CUSTOM POWER SUPPLIES AND REPLACEMENT SETS OF TUBES AND/OR CAPACITORS WITH MAKE AND MODEL. SCHEMATICS AND SERVICE REPAIR INFORMATION. STAN LOPES, 1201 MONUMENT BLVD., CONCORD, CA 94520.
****
AK 19 - GOOD $350: CROSLY 52 - VG $125, EARLY V - FAIR $100; ERLA SUPEREFLEX - GOOD $150; EICO "ELECTRO" TUNER - VG $200; FEDERAL 59 - GOOD $550, 110 - VG $400; RADIOLA 16 - EXC $125, 20 - VG $200, 25 W/LOOP - GOOD $75, 26 - VG $275, GRAND - VG $500, REGNOFLEX - GOOD $200, SUPERHET - GOOD $100, VOCAROLA - WORKING $150; TRAVLER - VG $90; TREGO REGEN TUNER AND 2 TUBE AMP - VG $250; ZENITH 4R - VG $300. PRICES NOT INCLUDING SHIPPING OR TUBES, TRADE FOR A.K. CONSIDERED. MIKE KREUSER, 1004 DOBSON, EVANSTON, IL 60202.
****
NOW AVAILABLE: send $2.00 for your 1984 subscription to the "Add-A-Page" antique radio parts catalog. Each issue will contain a reprint of an ANTIQUE RADIO CORNER colum as printed in Elementary Electronics magazine. James Fred, R1, Cutler, IN 46920.
****
CLEANING HOUSE - OVER 100 RADIO EMPTY CABINETS FOR SALE, ATWATER KENT- GREBE- DEFOREST-FREED EISEMANN- R.A.D.A.- DAYTON- KOLSTER- SLEEPER-STEWART WARNER AND MANY OTHERS-ALSO SOME FRONT BAKELITE PANELS. SEND $1.00 AND S.A.S.E. FOR LIST AND PRICES. REFUNDABLE WITH FIRST ORDER. PHIL WEINGARTEN, 67-61 ALDERTON STREET, FLUSHING, NY 11374.
****
ATWATER KENT BREAD BOARD MODEL 10 #4700. SOLD AS PACKAGE ONLY. INCLUDES MINT A.K. TYPE "M" HORN SPEAKER, SEARS BATTERY ELIMINATOR AND TUBES (2 "RAINBOW" CUNNINGHAM). $500.00 ALSO A.K. 20 (SMALL) WITH MODEL H SPEAKER $100.00 UNIQUE METAL "RADIO RING TOSS" GAME $50.00 STEVE MARSHALL, 632 N.W. 13TH STREET, APT. 31, BOCA RATON, FL 33432, (305) 391-5891.
****

****

AERIOLA CRYSTAL SET.. $100 -- King 5 tube battery set .. $75 -- Detrola short wave converter .. $35 -- Philco 38-12 (p 126, FOS).. $25 -- DeForest D-10 cab (repro) ..$50 -- Peerless speaker clean.. $20 -- Radiola Superhet parts set ..$25 -- Philco 70 cathedral ..$100 -- Hallicrafter Civil Patrol 30-50 meg. .. $25 -- RCA Transworld portable ..$35 -- Motorola mini portable ..$15 --- For trade .. Marconi 106-D ---- Richard C.Foster, 12 Shawmut Avenue, Cochituate, MA 01778.

****

COLLINS watt meter and phone patch, good condition, $200. plus postage, owner deceased. Betty Dawes, Trout Run, PA 17771. Phone (717) 998-9336.

****

FOR SALE: OLD RADIOS AND TEST EQUIPMENT. SEND LONG S.A.S.E. FOR PIX PRICE LISTS. JOHN MARTIN, 817 COOK AVENUE, BILLINGS, MT 59101

****

WANTED

DETROLA PEEWEE MODEL 219 c. 1939 and MAJESTIC Model 5AK711 c. 1947. Both are small AC/DC plastic sets. J.W.F. Puett, Box 28572, Dallas, TX 75228.

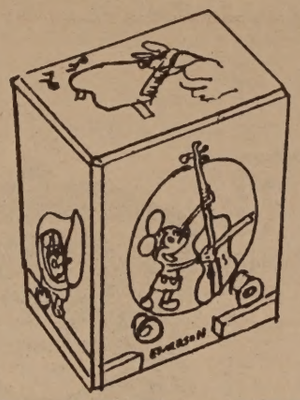
WANTED: NON-CHROME SCOTT RADIOS PRIOR TO 1931. ALSO WILCOX LAB, EMEROLA AND OTHER RADIOS FROM MICHIGAN. JIM CLARK, 1006 PENDLETON, LANSING, MI 48917. (517) 323-9595.

WANTED: WE ARE LOOKING FOR OLD ELECTRON TUBES. Our buying prices are: 2A3 $6.00 -- 45/ 145/ 245/ 345 $10.00 -- 50/ 250/ 350 $12.00 -- VT-52 $6.00 -- VT-62 $4.00 -- 202 $10.00 -- 203A $10.00 -- 210 $10.00 -- 211 $10.00 -- 224/ 227 $4.00 -- 242C $15.00 -- 82 $4.00 -- 83 $4.00 -- 280 $8.00 -- 281 $8.00 -- 845 $20.00 -- 5691/ 5692/ 5693 $6.00. For all the tubes that are originally boxed, especially antique shaped tubes that are RCA boxed, we will pay extra charge of a $1.00 or more. About used tubes please contact us. ---- Western Electric brands: VT-1 $15.00 -- VT2/ 205B/ D/ E $12.00 -- 101D/ F / 102A/ D/ F/ G (only antique glass 101 and 102) $12.00 -- 211A/ E $20.00 -- 212D/ E $30.00 -- 242A/ C $20.00 -- 252A $20.00 -- 262A/ B $6.00 -- 274A/ B $12.00 -- 275A $20.00 -- 284D $25.00 -- 300A/B $50.00 -- 301A $8.00 -- 339A $8.00 -- 350B $15.00 ----- P and C Electronics, 4-12-14 Yushima Bunkyoku, Tokyo, Japan 113

WANTED: EMERSON SNOW WHITE 1938 AC-DC RADIO. SEND PHOTO AND PRICE TO KRIS GIMMY, 1441 NOTTINGHAM DRIVE, AIKEN, SC 29801

WANTED: 1 TUBE SETS, CRYSTAL SETS, GREBE CR EQUIPMENT. RAY GARNER, ROUTE 1, BOX 320, BIG SANDY, TN 38221.

ELECTRO- MEDICAL AND QUACK DEVICES, BOOKS WANTED. INTERESTEDD IN FLOOR MODELS ANDS IN DEVICES WITH MULTIPLE KNOBS RESEMBLING RADIOS BUT WHICH ARE NOT RADIOS. I AM ALREADY SATURATED WITH VIOLET RAY DEVICES, SIMPLE 4D BATTERIES. PLEASE DESCRIBE AND PRICE. OLE LINDAN, 1404 DORSH ROAD, CLEVELAND, OH 44121



WANTED: EMERSON MICKEY MOUSE 1933 RADIO. KRIS GIMMY, 1441 NOTTINGHAM DRIVE, AIKEN, SC 29801

WANTED: Operating manual for a National SW-5 which uses the 5880 power box. Also need a set of coils or winding data with forms and wire to roll my own. Will welcome any past or present owner's experiences in operating this set. D'Arcy Brownrigg, P. O. Box 292, Chelsea, Quebec, Canada, J0X 1N0.

WANTED: FOR WURLITZER S-40 MIDGET SUPER RESTORABLE CABINET WITH DIAL PLATE. WILL BUY JUNKER. ALSO ST. JAMES 240KC I.F. XFMR BROWNING DRAKE COILS. BILL JELINEK, 128 N. STEVENS, RHINELANDER, WI 54501.

---

2 DRIVE BELTS FOR ZENITH RADIO MODEL 9S262, 1 FRONT 1 BACK. RUSS SCHOEN, R # 1, BOX 224, CLINTONVILLE, WI 54929. PHONE (715) 823-6744

WANTED -- ATWATER KENT MODEL 33 CHASSIS IN GOOD CONDITIONN TO FIT A.K. 33 DESK RADIO. I HAVE THE DESK, WITH SPEAKER, BUT THE RADIO IS MISSING. CARL REINKE. 2724 N - 27TH ST., SHEBOYGAN, WI 53081. PHONE (414) 457-4320.

SCOTT PHILHARMONIC RADIO in good complete condition, call collect evenings (916) 666-2250 or write, Charles Jones, 121 Midway Drive, Woodland, CA 95695.

WANTED: CABINETS FOR RADIOLA 25, DEFOREST F-5 OR F-5M, KOLSTER 6D. DIAL ESCUTCHEON FOR PHILCO 20 CATH., JOHN MARTIN, 817 COOK AVE., BILLINGS, MT 59101, (406) 252-4287.

WANTED: AK 47 power supply and interstage audio transformers, UZ1325 base and driver. Jim Conaway, 709 Halstead Road, Wilmington, DE, 19803, (302) 478-5815.

WANTED: "Radio Pen" facsimile receiver by John V. L. Hogan as shown in RADIO NEWS for August 1934. Uses a magnetically operated self-inking pen to draw closely spaced lines on a moving 3" wide plain paper strip. D'Arcy Brownrigg, P. O. Box 92, chelsea, Quebec, Canada, J0X 1N0.

WANTED: Any brand of used working tubes or new; 2A3, 45 (245, 345, 445), 50 (250 ,350, 450), 80, 81, 82, 83, 202, 203, 210, 211, 224, 227, 242, 845, 5691, 5692, 5693 and Western Electric equipment (such as tubes, amps., mixers, consoles, drivers, tweeters, horns, speakers, parts) tel. (818) 576-2642, David, P. O. Box 832, Montery Park,CA 91754.

JUNKER CHASSIS FOR PHILCO 60, chassis, speaker and knobs for RCA R-74, R-76, or R-77 -- 0-5 VDC 3 hole panel meter 2 1/16" mounting hole diameter, 5-UX199. Michael Payne (713) 585-4292, 601 E. Coombs #10, Alvin, TX 77511.

WANTED - PAIR OF SCOTT HIGH FREQUENCY SPEAKERS FOR ALLWAVE IMPERIAL., ARTHUR JOHNSON, 15312 WOODRUFF PLACE, BELLFLOWER, CA 90706.

CROSLEY MODEL 51A, two stag amp., Jack Wallace, 5516 Gilbow Avenue, River Oaks, TX 76114

LIMITED TIME OFFER

BACK ISSUES

STARTING
JULY 1,1984
ENDING
SEPTEMBER 1, 1984

ANY YEAR'S GROUP OF
10 BACK ISSUES OF

THE HORN SPEAKER

FROM 1980 THROUGH 1983
WILL BE AVAILABLE FOR
ONLY $5.00

ALL FOUR YEARS ONLY $15.00

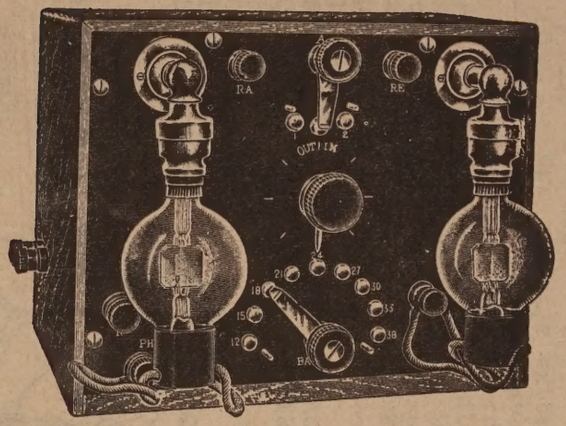
ALL BACK ISSUES SENT POSTPAID

THE HORN SPEAKER, BOX 53012, DALLAS, TEXAS 75253

JUNE JULY AUGUST

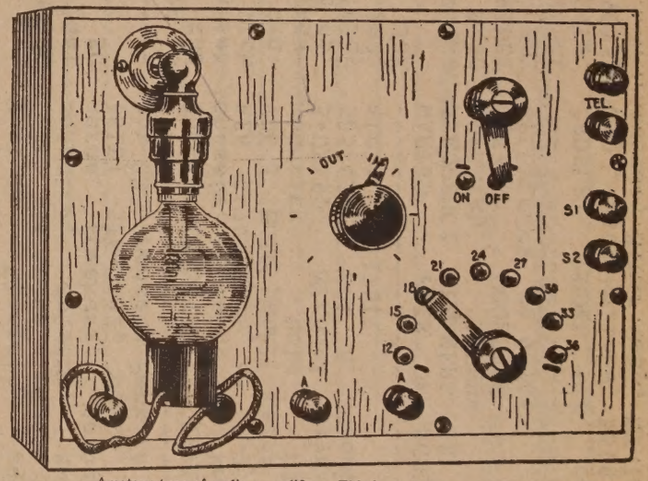
THE HORN SPEAKER

1984



—Professional type of audion detector. It is provided with two super-sensitive Audion Bulbs, high voltage local battery, potentiometer switch graduated to show voltage at any point, switch to change from one bulb to the other, and rheostat to change brilliancy of filament. This detector is used by the U. S. Army and navy, and is furnished in oak and hard rubber; size, 9¼ by 9 by 7 inches. Three dry cells to light filament are necessary.

1909-1917



—Amateur type of audion amplifier. This is an instrument which is used in connection with any detector, preferably an audion detector, for increasing the intensity of received signals from 5 to 10 times. It is not a detector itself in any way. Through its use, messages can be read clearly which otherwise cannot be even heard. Its use enables the operator to receive over ranges which are not otherwise possible. This type of audion amplifier will remain in adjustment indefinitely, like the audion detector, and is not appreciably affected by mechanical vibration.

**5586 *73*
ART B CORBUS
5704 11TH AVE NW
SEATTLE WA -98107